Indian Mammals on Texas Rangelands[1]

BY

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(With two text-figures)

Seven species of Indian ungulates have been introduced onto rangelands in Texas. At least four of these species are successfully established with population in excess of 4,000 animals. Similarities and contrasts between the Texas and Indian habitats are noted and the role of exotics on Texas rangelands is discussed.

INTRODUCTION

Within the State of Texas at least 26 species of non-native ungulates, exclusive of domestic livestock, have been introduced by landowners. Most of these exotics exist as free-ranging herds on private ranches which vary in size from a few hundred acres to more than 100,000 acres. In some instances individuals of a species have escaped and spread over large geographic areas. Most, however, are confined within individual ranches by 7-8 foot high game-proof fences.

United States Government health regulations prohibit direct importation and release of wild ruminants and swine from countries where foot-and-mouth disease or rinderpest is declared to exist. However, animals with proper health inspections and clearance may be imported and placed under permanent consignment to specifically approved zoological gardens where the animals must spend the remainder of their lives (Smith 1968). The progeny of these captive animals can be purchased and released on private lands in Texas and in some other states (Craighead & Dasmann 1966). Such releases have

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been made by landowners since as early as 1924 (Sheffield *et al.* 1971). As range herds produced surplus animals and the demand for animals to stock other ranches grew, the activity of supplying exotics shifted from zoos to private ranches. Presently the supplying of breeding stock has become a business for some ranches.

Most early stocking of exotics was motivated by the allure of new and different game species. However, in recent years the economic possibilities of game ranching to supply trophy hunting to paying sportsmen has promoted new releases. As of 1971, more than 300 ranches in Texas had one or more species of non-native big game.

Indian species present

Places of origin for exotics in Texas include Africa, Asia, Europe, and the Mediterranean region. The most numerous and widespread species, excluding wild sheep (*Ovis* spp.), are native to the Indian subcontinent. Seven species of Indian origin exist on ranches throughout the State (Table 1). Estimated numbers are based on a 1963 survey by Ramsey (1969) and modified by data collected since that time. A current survey would surely show larger numbers and wider distribution within the state.

Table 1

Species and numbers of Indian ungulates that occur in Texas

Chital (*Axis axis*)	> 10,000
Blackbuck antelope (*Antilope cervicapra*)	> 4,000
Wild Boar (*Sus scrofa*)	> 10,000
Nilgai antelope (*Boselaphus tragocamelus*)	> 4,500
Red deer (*Cervus elaphus*)	> 300
Sambar (*Cervus unicolor*)	> 100
Barasingha (*Cervus duvauceli*)	> 50

The animal nomenclature follows that of Prater (1965). Subspecies present are generally not known, or have been obscured by interbreeding. Easily recognized morphological differences exist among certain species, but it is uncertain whether or not these are genotypic or phenotypic variations. Most chital fit the general description of *Axis axis axis,* however, some ranches have a form smaller and stockier in size, and with shorter antlers. These animals more closely resemble *Axis axis ceylonensis.* The red deer or stag and the wild boar are advertised in hunting brochures as being European in origin. However, some zoo stock came from India or the Himalayan region, and

doubtlessly have supplied some of the animals stocked on Texas ranches.

Distribution and Habitat in Texas

Areas in the state which contain the greatest numbers of exotics are the Edwards Plateau, the South Texas Plains, and the Gulf Prairies and Marshes (Fig. 1). Reasons for this pattern of distribution are partially cultural and partially ecological. The largest number of species and the greatest numbers of animals are in the Edwards Plateau. This region is devoted mainly to ranching enterprises: cattle, sheep, and goats. It is also the area containing the greatest numbers of white-tailed deer (*Odocoileus virginiana*). In recent years the economic return from sheep and goats has greatly declined. Landowners have consequently sought means of supplementing ranch income by stocking exotic game and charging sportsmen for the privilege of hunting.

Ecologically, the regions of Texas with the largest numbers of exotics are very similar to their native ranges in India. The area of Texas containing most exotics is between 26° and 31° N. latitude, and lies

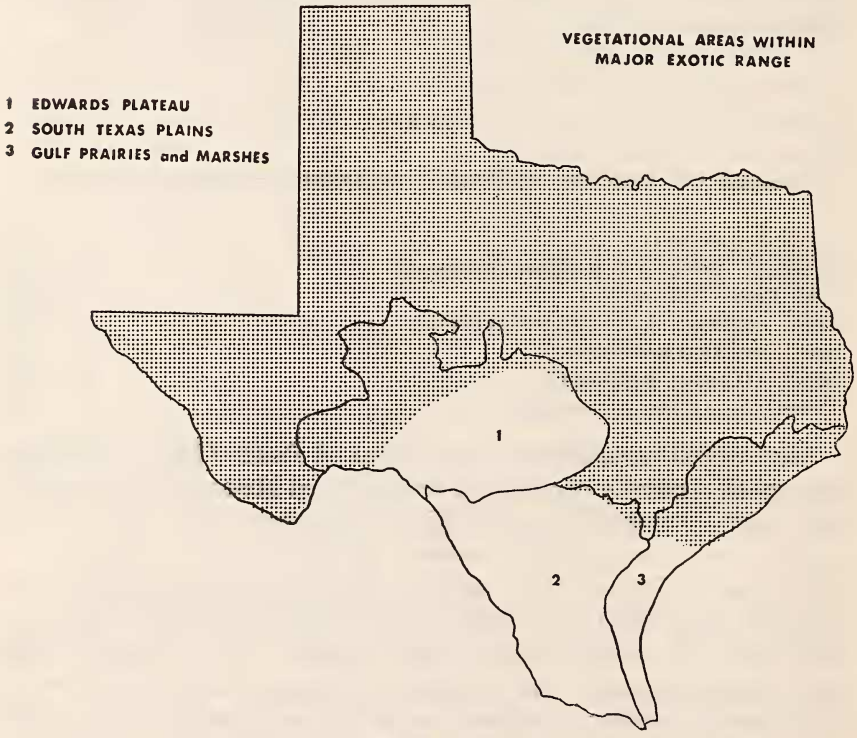

Fig. 1

within the latitudinal ranges of India, approximately 8°–33° N. latitude. Annual patterns of temperature and precipitation are similar in both regions with extremes in precipitation in India being greater (Fig. 2). Temperatures in the northern Edwards Plateau sometimes drop below 0° F. during the winter, while in some years temperatures do not fall below 32° F. in the extreme southern tip of Texas.

The Edwards Plateau is an area of some 24 million acres characterized by rough, stony hills dissected by several river systems. Elevations vary from 1,200 to more than 3,000 feet. Soils are shallow and underlain primarily by limestone. The climax vegetation is grassland and open savanna. Overgrazing by domestic livestock has depleted the grass cover and has resulted in an increase of woody plants such as mesquite (*Prosopis juliflora*), live oak (*Quercus virginiana*), shinnery oaks (*Quercus* spp.), and junipers (*Juniperus* spp.).

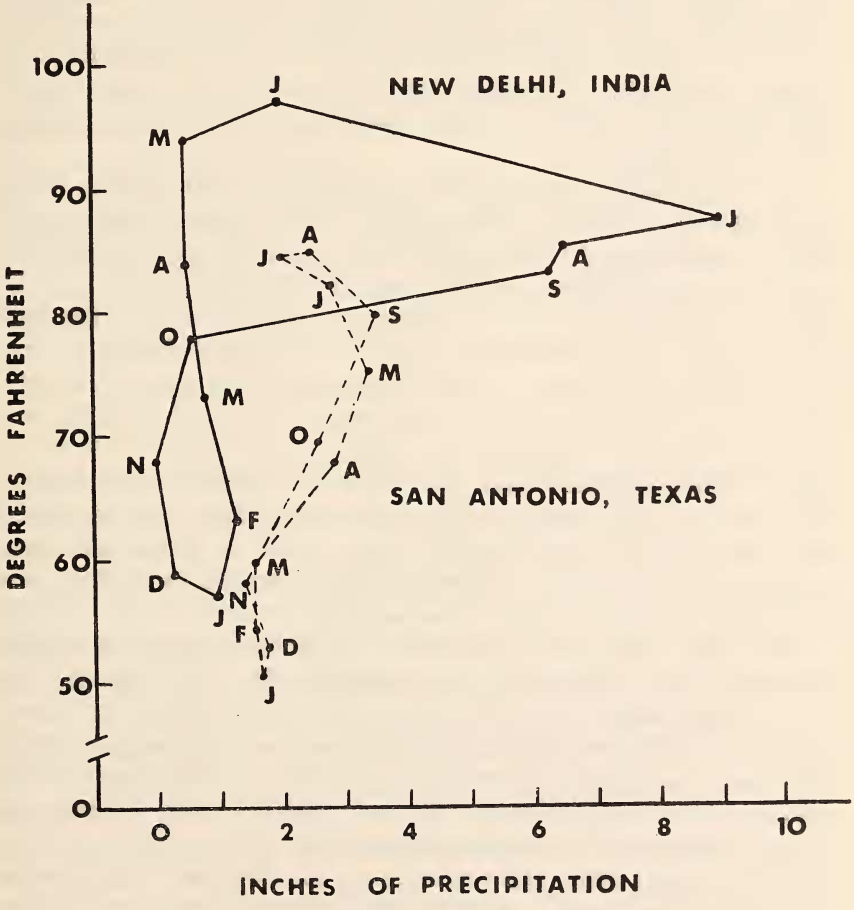

Fig. 2

The South Texas Plains and the Gulf Prairies and Marshes together comprise an area of almost 30 million acres. This region of flat to rolling topography originally supported a climax grassland. Reduced numbers of fires and overgrazing by livestock have vastly altered the plant community until now scrub woody vegetation is the predominant growth form. Invading woody species include mesquite, live oak, prickly pear cacti (*Opuntia* spp.) and several species of *Acacia*. Land use practices are similar to those of the Edwards Plateau though farming is more intensive on the Coastal Plains.

The wild boar is perhaps the most numerous and widespread species, but because of its secretive behaviour it is difficult to accurately estimate their population. This cosmopolitian species quickly adapted and successfully established itself in the wild. In several regions the animals have mated with feral domestic swine. The resultant wild hog is not readily accepted by landowners particularly in the Edwards Plateau where they cause damage to net-wire fencing and occasional depredation of young sheep and goats. They are also accused of competing for food with native game and destruction of turkey (*Meleagris gallopavo*) nests. However, little documented information on their true role is recorded.

The adaptability of spotted deer is apparent in that it has a wider distribution of established herds than any other species. There are at least two populations of chital that number more than 1000 individuals. In addition, an unknown number have become established as free-ranging wild animals outside of game-proof fences in the Edwards Plateau. One large population exists on the Coastal Plains in predominately low (1-6 feet) live oak interspersed with open grasslands. However, the majority are in the more rugged, drier Edwards Plateau. Spillett (1966, 1968) described the habitat of the chital in India as primarily open deciduous forest that sometimes graded into thorn scrub. There was an indication in the drier areas that chital were associated with water supplies (De & Spillett 1966). Chital in Texas are found in vegetative types closely resembling those described by Spillett, and in dry regions they are more common along streams.

The largest continuous population of a single species is the nilgai which occupies a 1000-square mile area including King Ranch, Inc. and adjoining ranches along the lower Texas coast. This single population of 2200-2400 animals is reproducing well and expanding its range (Sheffield *et al.* 1971). The vegetative description of the nilgai's Indian habitat by Spillett (1968) and Sankhala (1964) is also appropriate to its Texas habitat—a dry deciduous forest or dry deciduous thorn forest with nilgai being more common in the drier more open areas.

Blackbuck are found in small numbers in the coastal plains, perhaps similar to that described by Daniel (1967) for southern India. The

largest numbers occur in rangelands of the Edwards Plateau, a habitat consisting of an interspersion of scrub oaks and grassland. Blackbuck are successful in the open scrub which they utilize readily as escape cover. They seem more tolerant of overstory canopy than the native pronghorn (*Antilocapra americana*).

Sambar deer are present in smaller numbers with very limited distribution and it is difficult to assess their establishment. One population of 50 animals occurs in the Gulf Prairies and Marshes vegetative area. On the ranch where they occur, along with 1200 chital, the sambar remain almost exclusively in thickets of the larger live oak. They are frequently seen feeding on submerged aquatic vegetation in 1-3 foot deep brackish lakes adjacent to the coast. A second small herd in the Edwards Plateau remains close to a small freshwater lake and have been observed feeding on aquatic vegetation. It appears that their distribution is restricted by habitat preference. However, in India they are widely distributed through seemingly similar habitats to those in Texas.

Red deer are more widely distributed than sambar deer, but because of their close similarity to native elk (*Cervus canadensis*) and their large size, they are not very popular. They adapt well to semi-captivity, but when confined together they breed with elk. The offspring of this mating is neither as valuable as the elk nor the red deer.

Barasingha exist on only a few ranches, and in such small numbers that little is known about their habitat in Texas. Other species of Indian mammals are confined to zoos.

Discussion

Climatic and vegetational similarities between habitats in India and Texas probably account for the success of most exotics. Also, since most populations in Texas were produced by zoo stock, they were already somewhat acclimatized. Supplemental feeding of newly acquired animals and protection from unwanted hunting further insured their survival. Throughout the region where exotics have been most successful there are few large predators. Coyote (*Canis latrans*) control is practiced intensively by ranchers who raise sheep and goats.

The potential natural spread of these exotics into other parts of Texas and into adjoining states is only speculative at the present. Low winter temperatures would seemingly limit the northern spread of many Indian antelope and deer. The blackbuck is sensitive to sub-freezing temperatures. Heavy mortality has occurred in some herds during late winter when food supplies were minimal and either snowstorms or cold rains produced additional stress. Young nilgai are born during all months,

but the peak of births is August-September, a season unfavourable for survival of young throughout much of the northern United States. The peak of births among chital in Texas is February-March, though some young are born during all months. In that region of Texas containing most chital late winter weather is not severe enough to hinder survival, but would likely prove fatal to fawns born further north. The same is true for all other species that give birth year-round or during the winter season.

Exotic ungulates seem well established and are becoming an accepted part of ranching and sport hunting enterprises in Texas. Exotics offer the sportsman unusual and unique opportunities. He can easily pursue trophy animals that would otherwise require considerable investments of time and finances if hunted in their native lands. To the landowner exotics offer some advantages over native species. Native game species are regulated by state game laws with bag limits and seasons being restricted. However, exotics are not regulated by game laws and may be harvested at the landowner's discretion. A group of several species can provide year-round hunting since reproductive patterns of exotics are different from native animals.

The potential of exotic game for meat production has not been an important consideration in the past, but presently there is an increasing interest in the potential of exotic animals as meat producers. Some species are better adapted to arid and semi-arid regions than are domestic livestock and some range scientists now suggest that selecting an animal species compatible with the vegetation is a better approach than altering the habitat to fit the animal. Thus, exotics are likely to occupy some role in ranching enterprises in Texas for some time to come.

Acknowledgements

Unfortunately most introduced ungulates in Texas were released with little or no knowledge of their biology, habitat requirements and possible consequences to native biota. To increase our understanding of exotics and their role in ranching enterprises in Texas a series of investigations were begun in 1967 by the Department of Wildlife and Fisheries Sciences of Texas A&M University. These studies were financed by a grant from the Caesar Kleberg Foundation for Wildlife Conservation. We gratefully acknowledge their support of this research programme.

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